Need for New Skills

New digital technologies are rapidly being adopted within building systems such as heating, ventilating and air-conditioning (HVAC) and lighting.

At the same time, there is growing awareness of operational problems in non-residential buildings. Building operators and service technicians are in the front line of the battle for energy-efficient operation but typically have limited and outdated knowledge and skills to deal with these challenges. There is a need to update 'traditional' curricula to include a much stronger emphasis on control systems, testing and troubleshooting.

Community colleges are the main source of education in this area and so have a key role to play in transforming the skills of workers in the buildings sector.

The Project

Partnership of Education/Research/Industry:

- Laney College
- Lawrence Berkeley National Laboratory
- The Deringer Group
- Industry Advisory Group

Goals

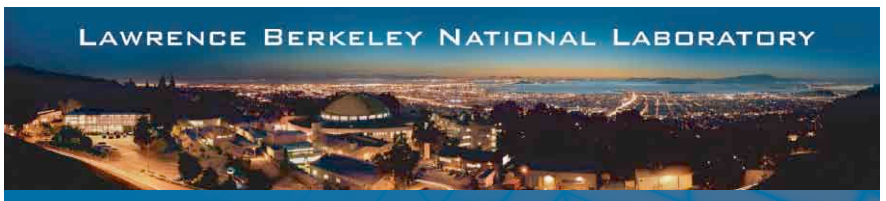
- New curriculum
- New learning paradigm
- Computer-based education tools

Advisory Board

Advisory Board identifies New Curriculum Needs and Reviews all Project work
Advisory Board represents a broad mix of stakeholders within the buildings industry

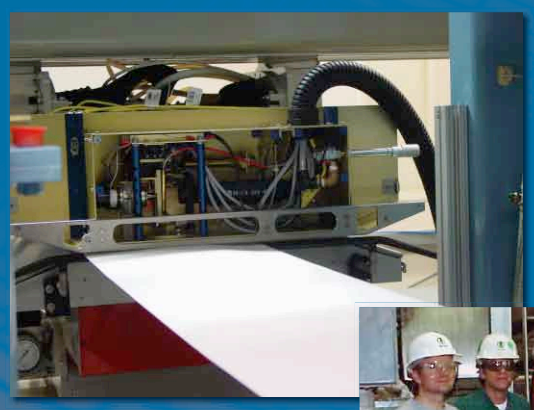
Building Industry Stakeholders

- Refrigeration Equipment & Service
- Residential Design & Service
- Equipment
- Mechanical
- Electric Utilities
- Controls Sales & Service
- Commissioning
- Energy Management
- Building Owner; Facilities
- Engineering and Specifying
- Educators



Laser Ultrasonic Sensor

For non-destructive, non-contact on-line measurements of mechanical properties of sheet materials such as paper, polymers, and metals at production speed.



Installed on a paper manufacturing line, the LUS:

- Saves energy
- Reduces paper waste —saving trees

If used in all U.S. mills, energy and material savings could amount to hundreds of millions of dollars per year.

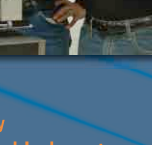
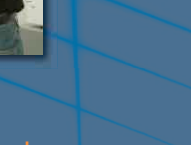
developed by
Lawrence Berkeley National Laboratory and
the Institute of Paper Science at Georgia Tech

2006 R&D 100 Award
Lawrence Berkeley National Laboratory

Industrial Technologies Program

Safety and Fuel Economy: The SUV, the Pick-Up Truck and the Automobile



Reducing vehicle mass will not necessarily make a vehicle less safe; in fact, reducing the mass of SUVs and pickups will make them safer to drivers of other vehicles.

Safety by Vehicle Type

Statistics on driver fatality rates by make and model reveal a lot about the true risk of driving SUVs, pick-up trucks and cars. The figure to the right shows two types of risk by vehicle type:

- The X-axis shows the risk to the drivers of that type of vehicle.
- The Y-axis shows the risk that type of vehicle imposes on the drivers of other vehicles.

SUVs and pick-up trucks are not as safe as many people believe; the additional risk of rollover in these vehicles increases their overall risk. They are not safer to their drivers than most cars. Other interesting results:

- There can be a large range in risk to rivers, even for cars in the same size class. For example, the subcompact models with the highest risk (Neon, Cavalier, Sunfire, Accent, Escort) have nearly twice the risk as those with the lowest risk (Jetta, Beetle, Elantra, Civic, Sentra, Ion, Focus).
- The average truck-based SUV (such as the Jimmy and the Cherokee) are no safer for their drivers than the average mid-size, large, or low-risk subcompact car models.
- Pick-up trucks are less safe to their own drivers than all classes of cars except sports cars and the high-risk subset of subcompact cars (Neon, Cavalier, Sunfire, Accent, Escort).
- The larger the vehicle, the more dangerous it is to the driver of the other vehicle in a two-vehicle crash; 1-ton pickups have five times the risk to other drivers as the average car.
- Crossover (or car-based) SUVs have substantially lower risks both to their own drivers and to other drivers than conventional truck-based SUVs.

Some of these differences are due to who tends to drive different vehicle classes, and where, such as:

- Sports cars, with high fatality rates, tend to be driven by young males, the riskiest drivers; minivans tend to be driven by safer drivers, and have low fatality rates. On the other hand, import luxury cars also have risky drivers, but low fatality rates.
- Pickup trucks tend to be driven in rural areas, which are less safe than urban areas.
- However, SUV drivers are no riskier than car drivers, and SUVs are driven in rural areas the same amount as cars.

Fuel Economy

One way to improve a vehicle's fuel economy is to reduce its mass; reducing the mass of a car by 10 percent increases gas mileage 3 to 7 percent.

For more information:

Wenzel, T. and Ross, M., 2005. "The effects of vehicle model and driver behavior on risk," Accident Analysis and Prevention 37:479-494.

http://eetd.lbl.gov/ea/teepa/teepa.html

Find Your Vehicle

Risks for individual models of fullsize vans, import luxury and sports cars, and 3/4-ton and 1-ton pickup trucks not shown.

Environmental Energy Technologies Division